

JCALs PC CLIENT VERSION 2 (PCCV2)



PROJECT STATUS MEETING AND HCI DEMO

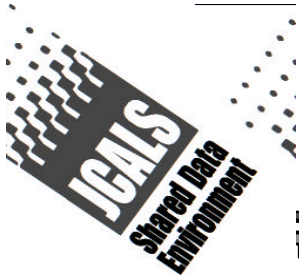
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PURPOSE

- **Provide the capability for JCALS applications (e.g., Workflow, Workfolder, Reference Library) to operate in the PC environment, by hosting native JCALS applications on the PC to leverage the affordability and performance associated with the PCs.**

- **Introduce PC-based client libraries which allow mission applications (e.g., TMs, Flagships) to utilize the Infrastructure environment provided by the JCALS Shared products (e.g., GDMS_API, CAF_API, WFM_API).**



PCCV1 vs. PCCV2

■ PC Client Version 1

- Xterminal Software Required**
- Manual Import/Export File Functionality to/from JCALS Desktop and Workfolders**
- Work In Progress Folder allows for Local Processing of “Checked Out” files.**
- In Box Notifications**

■ PC Client Version 2

- Xterminal Software is Optional**
- Full Jcals Desktop Functionality (Workflow, WorkFolder, To Do, Reflib, Inbox/Outbox as a native Windows PC Application**
- Local Mode allows for “offline” access/update of downloaded and locked files**
- Automatic file transfer to/from DMP from/to PC**



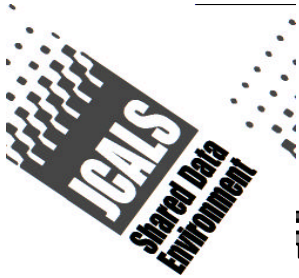
REQUIREMENTS

■ **Contractual Requirements**

- **Provide JCALS SWP1 Infrastructure Application Functionality Native on PC Windows Platforms:**
 - » **Windows 3.1, WIN 95, WIN NT**
 - » **TM Functionality (Recommended Change)**
- **Period of Performance: 01OCT95 - 30SEP96**

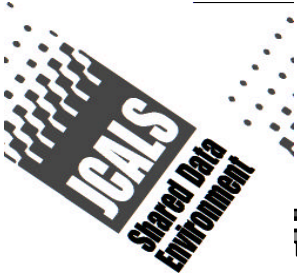
■ **Internal Requirements**

- **Drop 1: Provide “Core” Functionality and APIs on 19APR96**
- **Drop 2: Provide Remaining Functionality on 30SEP96**



SCHEDULE/CONTENT

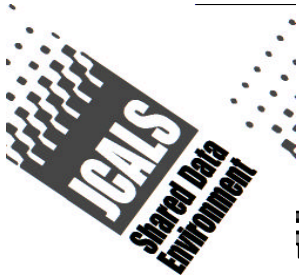
- **Increment 1 (19APR96)**
 - **APIs**: GDMS, CAF, WFM, REFLIB
 - **Functionality**: Workfolder, Workflow, Reference Library (Search), To Do List, InBox, OutBox, Org/Role/Person Chooser, OBAC, Help, Automated Installation.
 - **COTS**: Word Processing, Spreadsheet, Graphics, Project Management, Mail, Calendar/Appointment Scheduler, Low-end CAD, Postscript Viewer, X-Terminal Emulation, Adobe Portable Document Format (.pdf).
 - **APIs Will Be Available Internally Sooner (“Waterfall”)**:
 - » GDMS_API (already available)
 - » CAF_API
 - » WFM_API, REFLIB_API



SCHEDULE/CONTENT (Cont.)

■ Increment 2 (30SEP96)

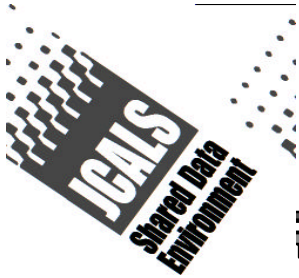
- **Functionality:** IRTS, System Administration, RBAC, TM Threads, Reference Library (Catalogue), TM A3 Thread (Recommended Change), TM PUB Chooser, Help, Automated Installation
- **COTS:** Conversion Services, Electronic Digital Signature, Postscript Commenting (Rasterbook), Technical Illustrator, CCITT Group 4 Redliner, CGM Viewer/Redliner, IGES Viewer/Redliner, A-B Scanning, OCR.



FORMAL DELIVERABLES/TASKS

■ **Engineering Tasks**

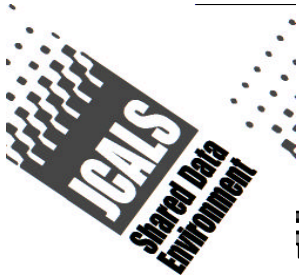
TASKS	OUTPUTS
Update the Application Integration Reference Manual	Formal Deliverable (AIRM)
Produce HCI Style Guide:	Formal Deliverable (HCI Style Guide)
Produce Operational Concept and Design Document	Formal Deliverable (Ops Concepts & Design Document))
Client/Server Architecture Analysis	SDF documentation: Allocation of CSUs to client or server.
Windows NT Server Study	Formal Deliverable: Windows NT Engineering Study
COTS Integration: Rqmts Analysis and Product Identification	SDF documentation



DELIVERABLES/TASKS (CONT)

■ **Software Development Tasks:**

TASKS	OUTPUTS
Software Development Tasks:	
Develop Client APIs	Software Delivery
Develop Infrastructure Application HCI	Software Delivery
Develop Infrastructure Applications	Software Delivery
Develop Infrastructure Support Applications/Common Utilities	Software Delivery
COTS Integration	Software Delivery
Develop Automated Client Install Program	Software Delivery
Problem Report Resolution / Implementation	Software Delivery & PR documentation
Server Tasks - Add Stored Procedures	Software Delivery
Security Tasks - Implement FORTEZZA Solution	Software Delivery
Develop T1M Recommended Change Application	Software Delivery



DELIVERABLES/TASKS (CONT)

■ Test & ILS Tasks:

TASKS	OUTPUTS
Test Tasks:	
Test Plan	Test Plan
Test Procedures	Test Procedures
Operational Test	Conduct of Operational Test
Evaluation/Test Report	Evaluation/Test Report
ILS Tasks:	
<i>AISM Development</i>	
End User Manual	Formal Deliverable: End User Manual
Computer Operations Manual	Formal Deliverable: Computer Operations Manual
<i>Design/Development</i>	
Training Documentation	Formal Deliverable: Training Documentat & Materials
<i>Training Implementation</i>	Computer Operations Manual
End User Course	Conduct End User Course
Computer Operations Course	Conduct Computer Operations Course



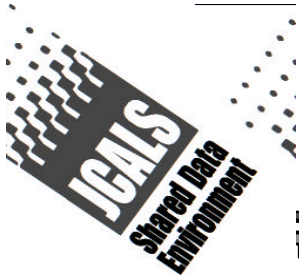
OTHER DOCUMENTATION

■ **PVCS**

- **Design Documents**
 - » **PCCV2 GDMS API Manual**
- **White Papers**
 - » **Win32 Shared Memory Availability and Usage**
 - » **PCCV2 Coding Standards and Guidelines**
 - » **Programming Interfaces for the JCALS infrastructure API's in PCCV2**
- **Features List**

■ **On-line Help for Developers**

- » **API Help Files**

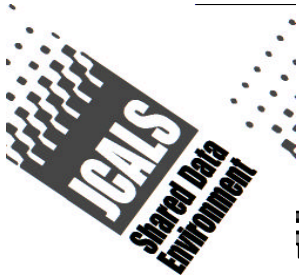


OTHER DOCUMENTATION (CONT)

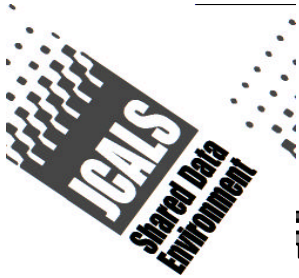
– Function Lists

» e.g., GDMS API

CSCI NAME	APPROACH (OO, FUNC)	FUNCTION/MODULE NAME	ORIG SLOC ESTIMATE*	REVISED SLOC EST.	COMPL SLOC COUNT	% COMP
GDMSAPI						
	OO	gdmsapi (DLL entry/exit routines)	108	110	110	100.00%
	OO	gdmsconn (Connection Manager)	1697	1600	1532	95.75%
	OO	gdparam (Parameter/Value class)	1114	867	867	100.00%
	OO	gdsqlcli (SQL CLI class)	0	587	587	100.00%
	OO	xdrclass (XDR Socket Library class)	0	370	370	100.00%
	OO	gdsocket (Async Socket Control)	0	347	347	100.00%
	OO	spcan (Abort SP_RESPONSE Dialog)	0	57	57	100.00%
	OO	OleGdms (OLE Automation class)	0	1271	1271	100.00%
	Functional	gdmscint (DLL 'C' interface)	1219	1393	1393	100.00%
	OO	gdmserr (Error Routines)	124	100	70	70.00%
	OO	gddebug (Debug Routines)	0	128	128	100.00%
TOTALS:			4262	6830	6732	98.57%



ACCOMPLISHMENTS TO DATE



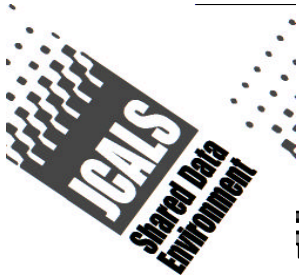
ACCOMPLISHMENTS TO DATE

- **Established Development Environment**
- **Design White Papers Generated**
 - GDMS API, Work Folder, Work Flow, Login Management, Session Management, Cache Management, Inbox, Outbox, Personnel Chooser
- **GDMS API 99% Complete**
 - In Integration Testing with PCCV2 Applications
 - Also being used by DDG51 Program
 - Design Documentation/API Manual Available
 - On Line API Help Available



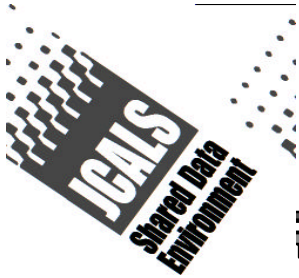
ACCOMPLISHMENTS TO DATE

- **Login Manager Complete**
 - Used By Session Manager and GDMS API
 - Design Documentation/API Manual Available
 - On Line Help Available
- **Session Manager Design/Code Complete**
 - Integration testing started.
- **Cache Manager Design Complete**
 - Over 3000 SLOCs Generated to wrap ODBC from a dynamic and portable C++ Class Structure
 - ODBC Class Structure will be reused by all applications requiring local PC Cache Database access (workfolder, etc.)



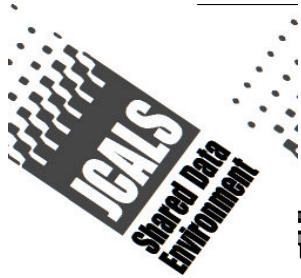
ACCOMPLISHMENTS TO DATE

- **All HCI Screens for Drop 1 Have Been Completed.**
 - HCI in process of generating standards documentation for the screens.
- **PCCV2 Task Bar (PC Client's Desktop) is in a "build-a-little, test-a-little" approach using available applications as they become available for integration**
- **InBox Design Complete**
 - Code/Unit Test is approximately 95% complete
 - BIFF Application Complete



ACCOMPLISHMENTS TO DATE

- The following applications are well into prototype phases, from which the design will be “refined” to form the APIs:
 - WorkFolder
 - WorkFlow
 - Outbox
 - Reflib Search
 - Launch API
 - Security API (RBAC)



Development Tools

■ **Compiler**

– **Microsoft Visual C++ Version 4.0**

» **Latest 32 bit Compiler**

» **MFC 4.0 Foundation Class Libraries**

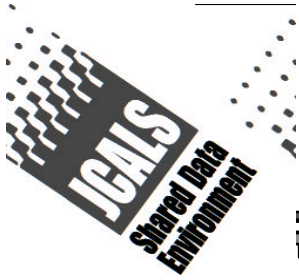
– **Updated Class Libraries for:**

- **WinSock**
- **OLE**
- **Win95**

– **Updated App Wizard, Class Wizard and Component Library**

» **C/C++ Provides 80+ Percent Portability from IBM Compatible to Macintosh Platform**

» **All HCI Screens Developed Using Visual C++ Resource Editor in App Wizard Which Creates Default Classes for “Rapid Prototyping”**

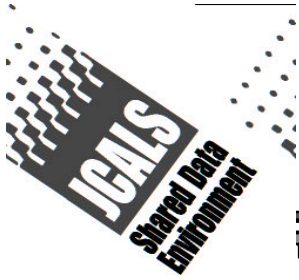


Development Tools (cont.)

■ Other Tools

- ForeHelp On-Line Help Compiler**
- Microsoft Visual Test**
- PVCS Software Configuration Management Tool**
- Calendar Widgets OCX**
- Microsoft Office 95**
- Microsoft Developers Network (MSDN)**
- InstallShield**

■ Alpha Workstation Hosted as a WND for DMP Interface and GDMS Testing



Development Platform

- **Gateway 2000 P5-120 PC**
 - 32 MB RAM
 - 1.6 GB Hard Drive
 - 3.5" Floppy
 - CD ROM
 - Tape Backup
 - 28800 Modem
 - Ethernet Card
 - Windows 95 OS
- **Windows 95 OS Provides 32-Bit OS for Development with Network Inter-Connectivity Between Developers**



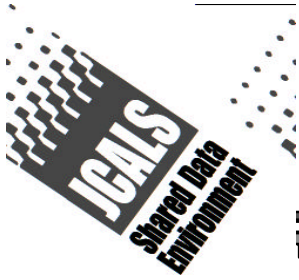
Target Platform

■ IBM PC Compatible

- Any Intel compatible processor equal to or better than a 50MHZ 486DX2, or 60MHZ Pentiums and above
- 16 MB RAM
- Hard Drive (minimum of 400MB recommended)
- Ethernet
- OS
 - » 32-Bit Operating System
 - Windows 95, Windows NT
 - » 16-Bit Operating System*
 - Windows 3.1, Windows 3.11 (WFW)
 - Requires Microsoft Win32s OS Overlay

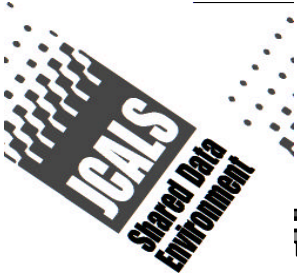
■ Server (JCALS SWP1)

- DEC Alpha w/128M Memory
- WND Configuration
- SWP1 baseline



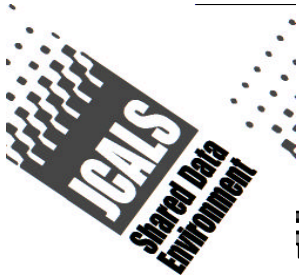
PCCV2 API Interfaces

- **PCCV2 Provides Application Programming Interfaces (APIs) for Customized Development**
- **APIs consist of a core set of routines to provide:**
 - **Stored Procedure Execution**
 - **Work Folder Activities**
 - **Work Flow Activities**
 - **Reference Library Activities**



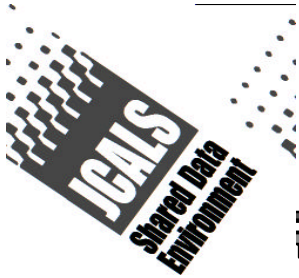
PCCV2 API Interfaces (cont)

- **API Interfaces are based on current identified use.**
- **At a minimum all APIs will provide a 'C' Calling Interface which can be accessed via a C/C++ Compiler, Visual Basic, Delphi, Power Builder, or any Windows 4GL Tool able to "link" with a DLL.**
 - **All 'C' API Interfaces are 32-bit**



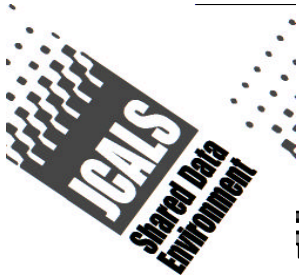
PCCV2 Interfaces (cont)

- **APIs May Also Present C++ or OLE Automation Interfaces.**
 - C++ interfaces are only accessible from MS Visual C++ 4.0 developed applications (32-bit) and/or Borland C++ Version 5.
 - OLE Automation interfaces are accessible from either 16 or 32 bit applications.
 - » Currently only the GDMS API has been identified to expose an OLE Automation Interface for 16-bit apps (.EXE)
 - » Login Manager has an OLE Interface but is only accessible from 32 bit applications. (.DLL)
 - » Session Manager has an OLE Automation and Controls access to the Login Manager and is portable to both 16 and 32 bit apps (.EXE)



Development Considerations

- **Interface to Existing SWP1 Server Functionality**
 - SWP1 Data Model
 - SWP1 Stored Procedures
- **Object Oriented vs. Functional Design**
 - Object Oriented methodology used wherever feasible to take advantage of MFC code library and extend portability.
 - Functional 'C' interface defined as a requirement for all APIs
 - OLE Automation used only when necessary & where identified
 - » More flexible, but slower
 - » Allows for “single object” in 32 bit system to provide for control software needing shared memory.



Development Considerations

■ 32 Bit vs. 16 Bit Issues

- Development is 32 bit OS based**
 - » MS has dropped support for 16 Bit development**
 - » “Next” version of Windows will probably drop 16 bit support also**
 - Current OS has two memory managers, etc. creating overhead**
 - » All 16 Bit programs operate in “global” address space allowing for “core walkers” and frequent General Protection Faults**
 - » All 32 Bit programs operate in their own address space for processing and data**
 - » MFC 4.0 is not portable back to 16 Bit**
 - » Win32s used for 32 Bit execution on 16 Bit OS**



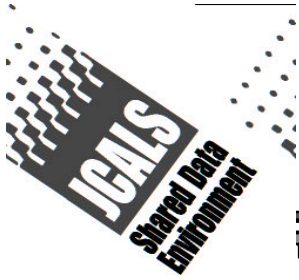
Development Considerations

■ **16 Bit API Support**

- No 16 Bit APIs
- 16 Bit Software (VB 3.0, PowerBuilder, etc.) can access APIs only through OLE Automation (OLE Automation Server must be an .EXE)

■ **32 Bit API Support**

- Full API Support ('C', 'C++', and OLE Automation)
- Tools Available Now for 32 Bit Development
 - » Microsoft Visual C++ 4.0 (Full API Support)
 - » Microsoft Visual Basic 4.0 ('C' and OLE Support)
 - » Borland C++ 4.5 ('C' and OLE Support)
 - » Borland C++ 5.0 (Full API Support)
 - » Borland Delphi ('C' and OLE Support)
 - » More To Come...



Development Considerations

- **Develop a “Well Behaved” Windows Program**
- **Target Systems may have the following constraints:**
 - Windows 3.1 or 3.11
 - Required to run Legacy DOS Applications
 - Run Windows on a Single Server to multiple “diskless” PCs